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... and Lenin said to Fair-ud-din :

"And so everybody has come to the Congress in Moscow, and each one tells his story, only you are silent. Speak up, friend. How do you live in your land, what do you expect from time?"

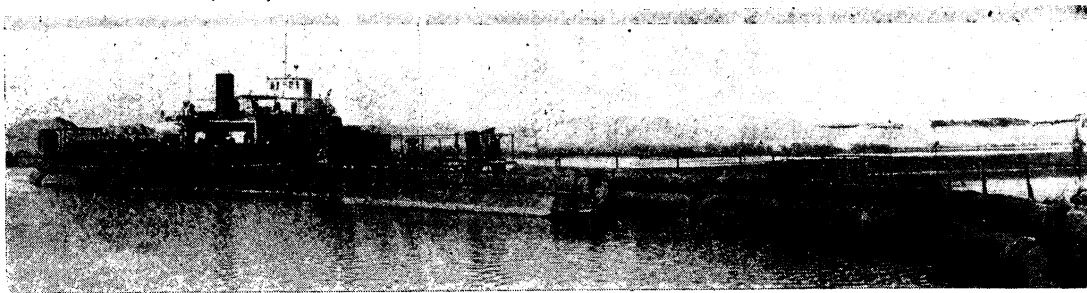
Fair-ud-din burst into tears and said: "What can I, an old Turkmenian from the tribe of Aball, say before you all? What can we expect from time, when time steals the last drop of water in the wells from us and covers the vineyards with sand? I come from the land known as the Kara Kum, which means the Black Sands. You, comrade, are thinking about the happiness of the poor people, but we think about water. And there is no water! Allah has caused our soil to dry up to the depth of ten elbow-lengths. What is to be done, comrade? You are mighty and powerful. You are a great man, you have a keen ear and a sharp eye, but how can you help us, Turkmenians? That is why I am silent at the great Congress."

Then Lenin laughed and answered old Fair-ud-din: "There will be water in the Kara Kum! The freed people will bring it, Fair-ud-din."

And then, Fair-ud-din heard it rumoured that a miracle had happened. Many engineers had come to Turkmenia, machines resembling iron camels had arrived. The Bolsheviks had decided to bring water to the desert.



Twenty-five years ago, a group of Turkmenian horsemen rode out from Ashkhabad, and on across the arid sands of the Kara Kum to distant Moscow. Aktelpek Nogiyev was one of them. Now he has returned to the Kara Kum to head a work-team on one of the great new constructions of communism.



A Sormovets-7 suction dredger at work on the Main Turkmenian Canal site. Excavation of the foundation pits for the hydro-electric station is now going rapidly ahead

BUILDING THE MAIN TURKMENIAN CANAL

by V. Eristov

Chief Engineer of the Construction of the Main Turkmenian Canal, Stalin Prize Winner

THE Soviet writer Konstantin Paustovsky recorded the legend of Fair-ud-din in Turkmenia in 1928. It truthfully conveyed the thoughts, dreams and longings of the people of Turkmenia, the hottest and driest of the Central Asian Soviet Republics. It also conveyed truthfully the policy of the Soviet State. For, from the earliest days of Soviet power, the Bolsheviks started bringing water to the Turkmenian desert. And, just two years ago, on September 12, 1950, the Soviet Government's decision to build the Main Turkmenian Canal was published.

This canal, to be completed in 1957, will be nearly 700 miles long—the longest canal in the world. It will begin in the lower reaches of the mighty Central Asian river, the Amu Darya, at Cape Takhia Tash, crossing the Kara Kum desert, to flow into the Caspian Sea near the city of Krasnovodsk.

Several dams with hydro-electric stations and shipping locks will be built on both the Amu Darya and on the canal. The desert will be covered with a network of irrigation and water canals, totalling 750 miles in length. Pipe lines carrying drinking water will be laid over hundreds of miles, pumping stations will be built.

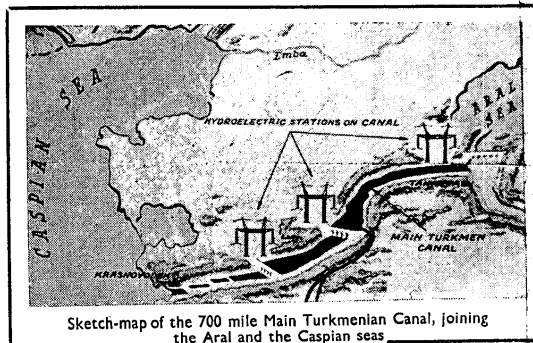
It is difficult to overestimate the significance of the Main Turkmenian Canal to the Soviet economy. This waterway will irrigate more than 5,000 square miles of new arable land, and will bring water to over 27,000 square miles of pastures in the Kara Kum desert. It will provide water for the cities and industrial enterprises of Western Turkmenia. The Turkmenian cotton crop will increase seven to eight times over.

The Main Turkmenian Canal is one of the greatest hydro-technical structures of modern times. The volume of the work which the builders will have to carry out there will be several times more than that completed recently on the Volga-Don.

Excavation work on the Turkmenian Canal will amount to over 650 million cubic yards of earth. This does not include irrigation and meliorative construction in the canal area. If all the soil to be excavated in the course of construction of the canal and the irrigation network were piled up, it would form a mountain almost five thousand feet high. Concrete and reinforced concrete to be poured will total four million cubic yards.

For the fulfilment of this stupendous task, powerful Soviet machinery will be sent into the desert. The canal will be dug with the help of suction dredgers with a capacity of nearly 2,000 cubic yards of soil an hour, electric walking excavators, with 183 cubic yard buckets, 25-ton dump-trucks, highly productive automatic concrete-mixing plants, etc. The battle against the sands will be joined on a wide front, with the help of all kinds of up-to-date machinery.

At present, energetic preparations are under way on all sectors of the Main Turkmenian Canal for the basic work connected with its



Sketch-map of the 700 mile Main Turkmenian Canal, joining the Aral and the Caspian seas

construction, and with the erection of hydro-electric stations on the Amu Darya.

Whoever saw the desert promontory of Takhia Tash on the Amu Darya a year ago would not recognise the place to-day. In the so recently empty desert a modern townlet of over 200 buildings has sprung up.

Takhia Tash has mains water, electricity and radio-relay service. Fountains play in the squares, 150,000 trees have been planted in the streets which are now being paved.

The new town already has a school, a restaurant, a hotel, a polyclinic, a library, post and telegraph offices and a trunk-line telephone exchange. A cinema has been built and a hospital, shops and a club are under construction.

The first physical culture festival in which sportsmen from among the builders took part, was recently held in Takhia Tash at the as yet unfinished stadium. A summer Young Pioneer Camp has been arranged for the children of the builders on the banks of the Kyzyltekken Canal.

Wharves have been built on the Amu Darya, the first portal crane is already working, and a second one is being installed. The first section of a wood-working plant has been completed, several machine shops and a garage are operating. Another garage and a number of industrial enterprises are under construction.

A temporary power station is working, and the supply of electricity is being increased by the use of a number of electric-power trains. Soon the construction will begin of a large heat and power station. It will supply all the necessary energy for the work on the Takhia Tash hydro-power development and the first part of the canal.

A railway line has been laid, connecting the construction site with the country's railway network. Goods trains now run straight to the

Takhia Tash site carrying larger quantities of goods every day from all parts of the Soviet Union: motor-cars, trucks, bulldozers, scrapers, excavators, portable power substations, prefabricated concrete-mixing plants, building timber, prefabricated houses, and innumerable other things. Three electric suction dredgers, the first of many, have already been assembled.

At the other end of the canal route, near the small town of Kazandjik, housing construction is proceeding on a large scale, motor trunk roads and railways are being laid, warehouses, workshops power stations and water mains are being built.

The construction of the first motor highways through the desert will begin soon. More than a hundred expeditions are conducting survey work in the desert, along the whole enormous length of the canal.

The whole collective of the builders of the great waterway through the Kara Kum Desert, from rank-and-file workers to engineers—are working with immense enthusiasm. The whole personnel challenged the builders of the Stalingrad Hydro-electric Station, to socialist emulation, undertaking to fulfil the 1952 plan of building and installation work ahead of schedule, by September 12, the second anniversary of the publication of the Government's decision.

Exemplary Stakhanovite work is being performed by builders who have come to the site from the V. I. Lenin Volga-Don Ship Canal, now successfully completed. The workers from the Volga-Don—excavator, bulldozer and scraper operators, assemblymen and other builders—are greatly exceeding their daily quotas.

Scheduled for completion in 1957, the great peaceful construction work in Turkmenia will be finished on time. The Legend recorded by Paustovsky will become reality.

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SCIENCE CHANGES THE DESERT

by T. Berdiyev

President of the Academy of Sciences of the Turkmenian SSR

THE Soviet people are performing truly heroic feats. They have linked the Volga with the Don, opening a powerful hydro-electric station at Tsimlyansk. Giant hydro-technical structures are being built near Kuibyshev and Stalingrad. Forests are being planted in the Volga steppes. And splendid changes are also taking place in our republic of Turkmenia.

In the once terrible, lifeless Kara Kum desert, cities and industrial centres are coming into being, life is being restored. The outline of the new waterway—the future Main Turkmenian Canal—can already be seen. It will mean an unprecedented improvement in Turkmenian economy.

The construction of the new canal—it will be the world's largest—across the Kara Kum Desert is no easy matter. The absence of roads or inhabited localities, the lack of fresh water over a huge desert area, the fact that considerable areas had been only poorly explored—all these factors



Bibi Tugirava (left) and Gozel Khojaliyeva live at the Stalin Collective Farm in the Ashkhabad district of Turkmenia. Soon peaches, cherries and apricots, like those that flourish in the orchards of their farm, will be growing over huge areas of what now are arid wastes of Turkmenia's great desert, the Kara Kum



The great irrigation, afforestation and canal plans, and, in particular, the Main Turkmenian Canal construction—two years old on September 12—are, with the aid of Soviet science, transforming nature over vast areas of the Republic. Here lorries of a geodetic expedition attached to the Main Turkmenian Canal project cross the Kara Kum

have seriously complicated surveying, prospecting and building work.

Hundreds of the most varied problems have had to be solved, and solved quickly. The route of the canal had to be worked out on the ground, the means and the area of reclamation of new lands defined, and the best way found of bringing water to the future pastures. The correct siting of future industrial centres, of shelter-belts, etc., have been other major problems.

All the largest Soviet scientific research institutions have taken part in carrying out

this vast work. Many expeditions have come to Turkmenia—from the U.S.S.R. Academy of Sciences, the Ministry of Geological Survey, from Uzbekistan, Georgia, Kazakhstan, Kirghizia and Tajikistan. The young Academy of Sciences of the Turkmenian S.S.R. has also joined eagerly in the work.

The success of any construction—and all the more of one in the Kara Kum Desert—greatly depends on a plentiful supply of high quality materials.

Our Soviet State has taken all the measures necessary to ensure satisfaction of every need of this great construction work. All kinds of goods and materials are arriving in an unending stream at the construction site from all parts of the country.

Turkmenia's very rich local resources are, of course, also being widely used. Geological prospecting and survey has revealed many deposits of valuable building

stones — limestone, dolomite, sandstone, marble, etc.—in our republic.

The Geological Institute of the Turkmenian Academy of Sciences has published a book on Turkmenian building materials and the extent to which they have been studied technologically. The sand of the Kara Kum used to be considered unsuitable for building use, but research con-

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ducted by our Institute of Anti-Seismic Construction has proved the contrary.

Scientists from Uzbekistan, Kazakhstan and Georgia, in close collaboration with the Central Asian Hydro-Construction Organisation, have carried out valuable researches into the technology of local building materials for the Takhia Tash hydro-electric scheme.

Special importance has been attached to the study of raw materials for the manufacture of concrete for the project. The Central Asian Institute of Hydro-Structures and Irrigation, and the Georgian and Kazakh Academies of Sciences have recommended the manufacture of such concrete from a mixture of rock (from Sultan-Uiz-Dag) and Kara Kum sand.

Turkmenia now has every opportunity of developing new branches of the building materials industry. On the western canal route, for instance, minerals have been found making possible the organisation of large stone-quarrying enterprises and factories producing many materials.

The rivers of Central Asia have many peculiar features. They frequently change their courses, leaving the irrigated lands behind and covering adjacent areas with silt.

The Amu Darya is particularly changeable. The annual displacement of its islands and shoals downstream reaches some half a mile to a mile—i.e., twenty times more than the comparable displacement on the Don or the Volga.

When erecting hydro-technical structures on the Amu Darya, therefore, these factors must be taken carefully into account. And the river bed is particularly unruly round Takhia Tash.

Along the canal route 5,000 square miles of land will be reclaimed and irrigated, while water will be supplied to over 27,000 square miles of pastureland.

At present, huge areas of desert are being closely studied by biologists, plant growers, soil experts, afforestation and melioration workers, and other agricultural specialists. Uzbek scientists have completed preliminary soil-meliorative researches over an area of more than two million acres along the lower reaches of the Amu Darya.

The Institute of Agriculture of the Turkmenian Academy of Sciences, in conjunction with the Aral-Caspian expedition, is making a study of the soils in the southern zone of the canal and the Kopet-Dag foothill plain.

Under the guidance of Dr. O. M. Djumayev, soil experts are also working out ways of combating the penetration of salt into the soil, and of reclaiming for agriculture patches of clay in the desert. Researches towards increasing the salt-resistance of the cotton plant and other crops are being conducted in the Institute of Biology, and the Institute's zoologists are studying the animal life of the canal route, searching out ways of fighting agricultural and other pests.

The plan for the irrigation of the desert with water from the Main Turkmenian Canal provides for a general improvement in the quality of the soil along the new bed of the Amu Darya.

A whole system of meliorative measures, combined with effective drainage, will be used.

In the new irrigation zone lie large patches of clay, previously considered unsuitable for cultivation. A detailed study of the physical and chemical properties of these peculiar soils has shown that, given a certain improvement in their structure, they become fertile.

On the clay plain north of Kizyl-Arvat, experimental fields have been laid out, on which plant growers from the Aral-Caspian expedition and the Turkmenian Academy of Sciences are cultivating wheat, perennial herbs and cotton. And interesting experiments are under way in the Tashauz area in the north of the desert.

There is an old saying that water and green plants are inseparable friends. Where there is plenty of moisture, trees and grass flourish luxuriantly, even on desert soil. At the same time the presence of plants helps the soil to retain the water.

The Main Turkmenian Canal will present a wide and unbroken green belt spreading out into oases around reservoirs. Orchards and cotton plantations will grow along its banks. There will be a forest zone of large shelter-belts along either side of the canal. Inhabited localities will be protected from sandstorms and hot dry winds by broad-leaved trees and bushes.

Scientists, and agricultural workers in particular, are already taking the first steps in selecting sites and starting cultivation of seedlings. The forestry managements of the Republic, the Chirkeev and Chapayev expeditions of the Agro-Forestry Planning Organisation are hard at work on this task, and the Kara-Kalinskaya Experimental Station of the All-Union Institute of Plant Growing is cultivating sub-tropical trees, fruit trees and conifers for the canal zone. Saksaul and other trees and bushes have already been sown over thousands of acres of desertland beyond Kazandjik and Nebit-Dag.